Reducing Greenhouse Gases in New Jersey: *Ongoing Efforts*

www.state.nj.us\globalwarming

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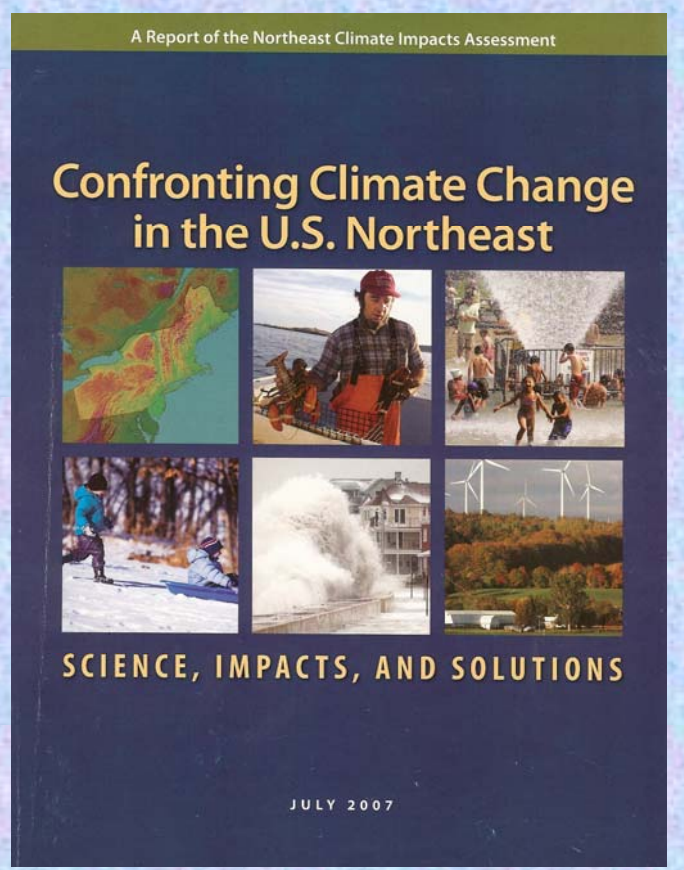
Global Warming: *Our problem, not our children's*



"...Today, the reality of a changing climate should serve as a clarion call to a new generation...

...What those of us in public life must supply now is leadership and the will to act."

Governor Jon S. Corzine

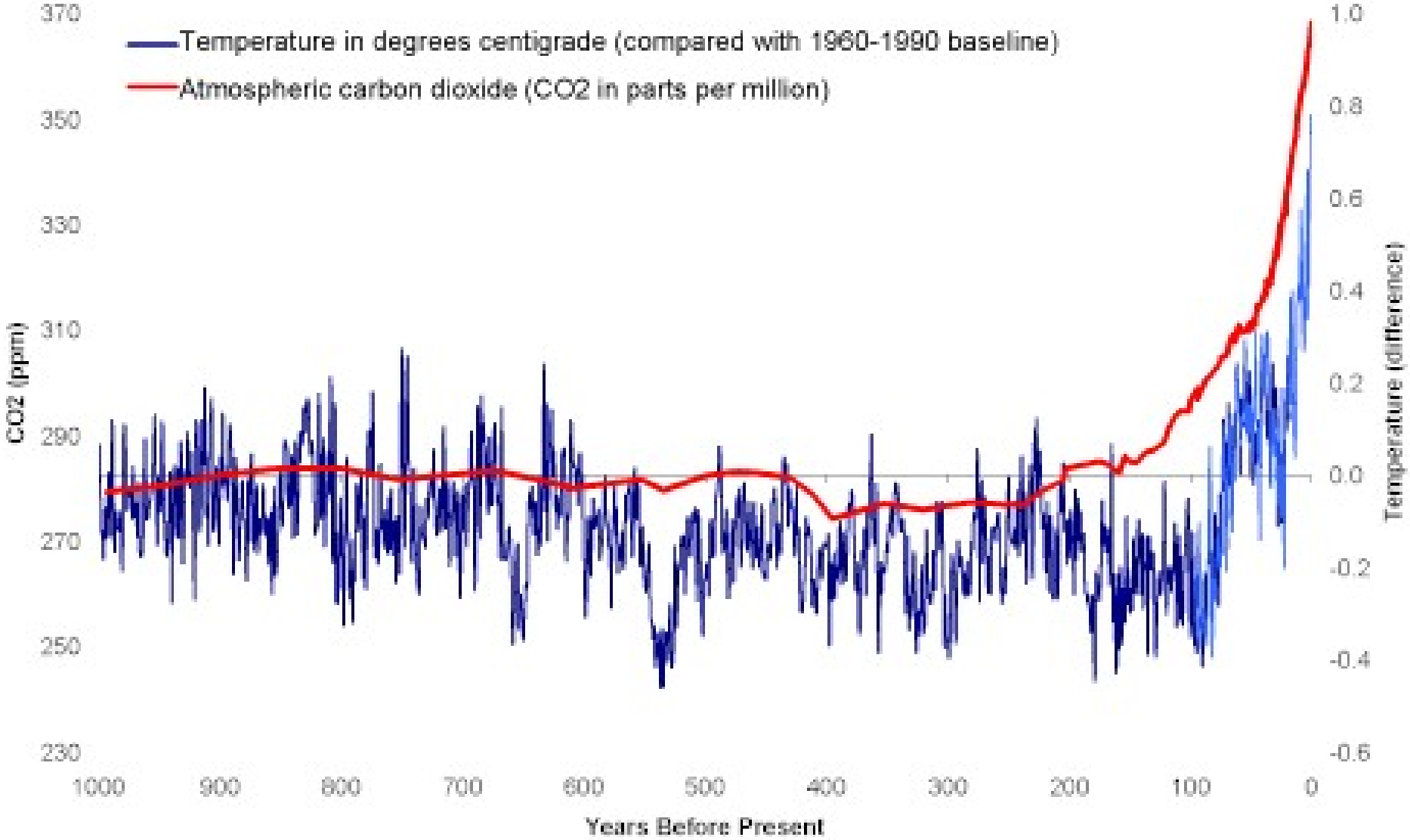
Impacts of Global Warming in New Jersey

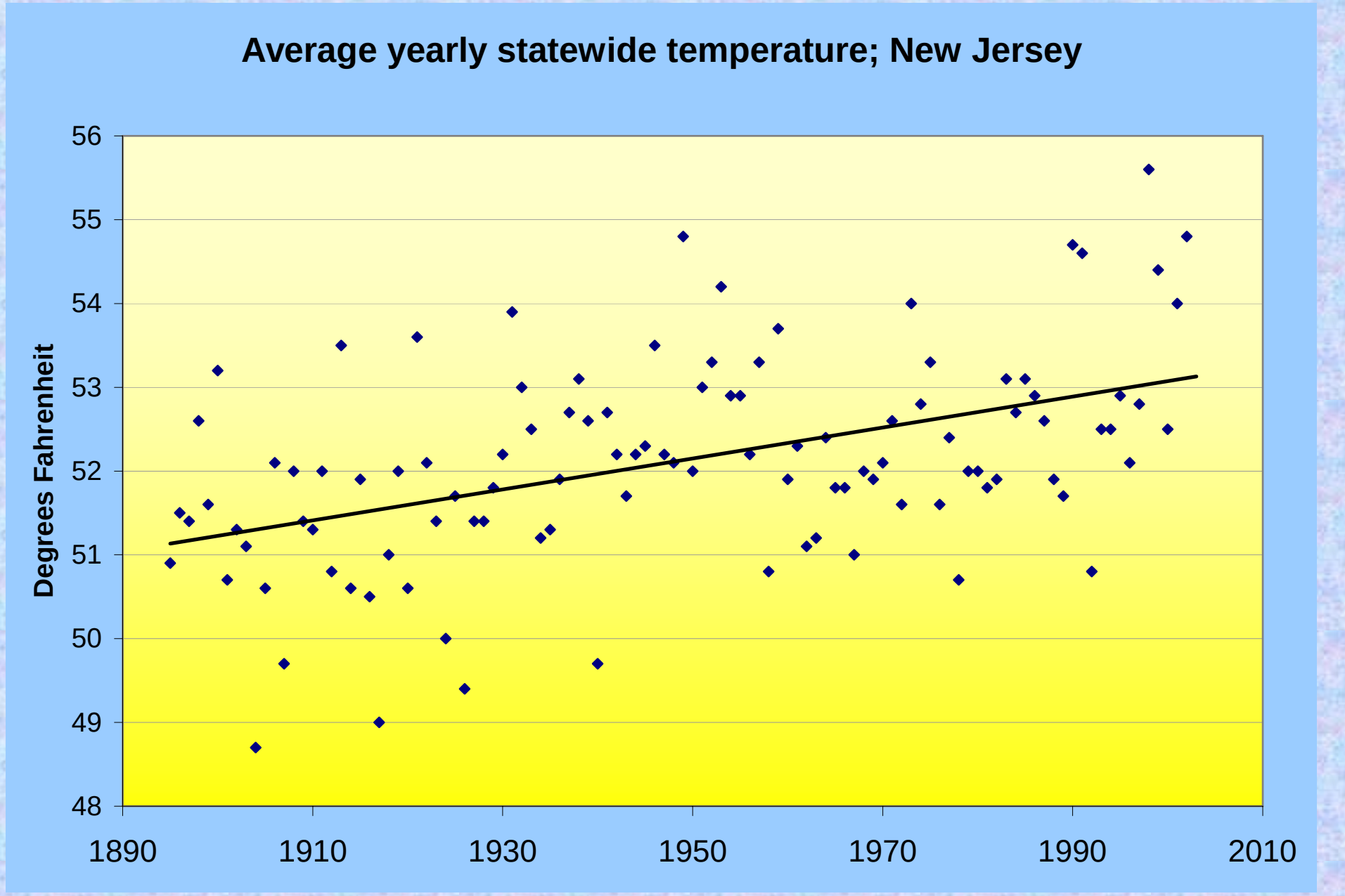
Agriculture

Public Health

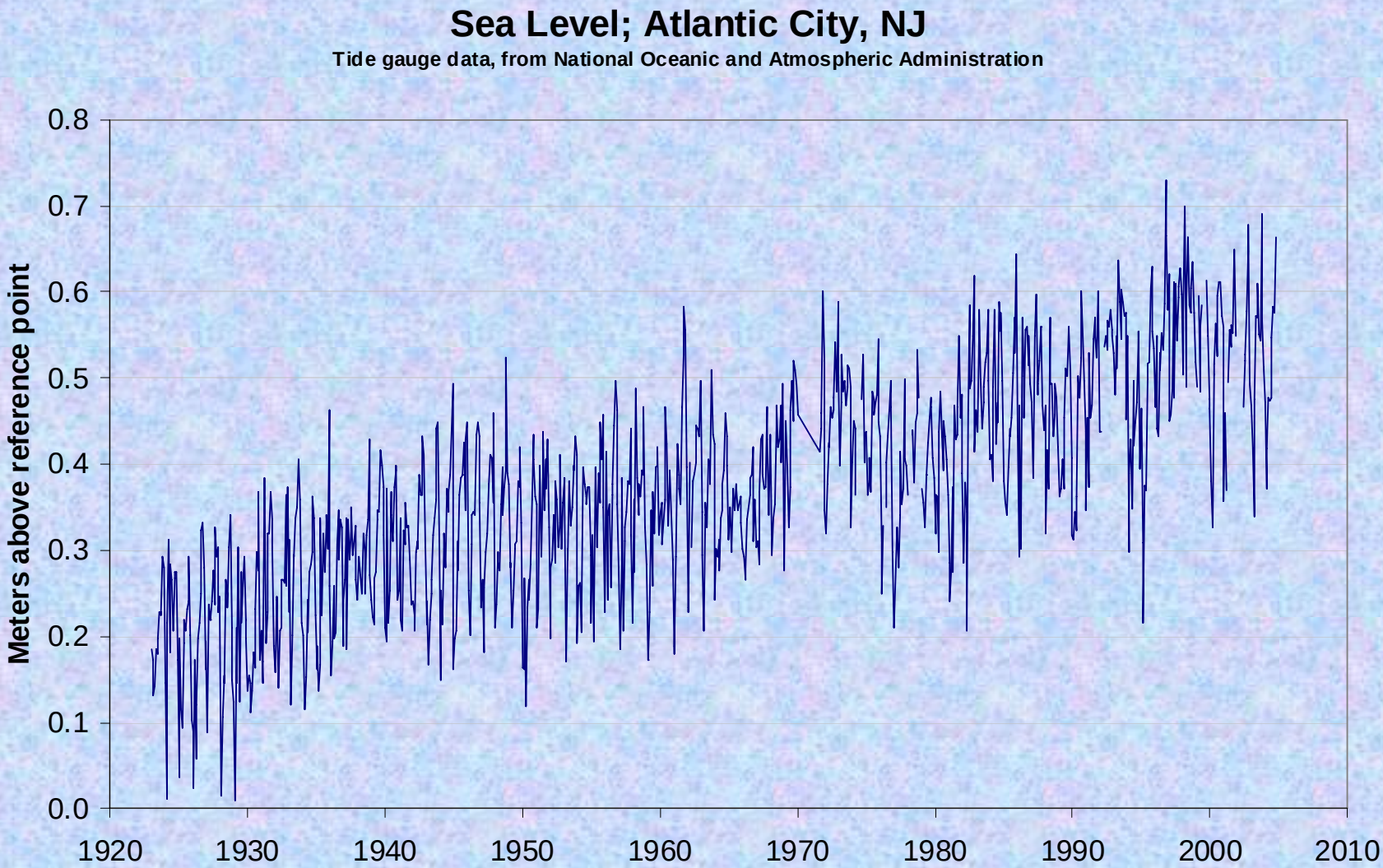
Economy

Ecological

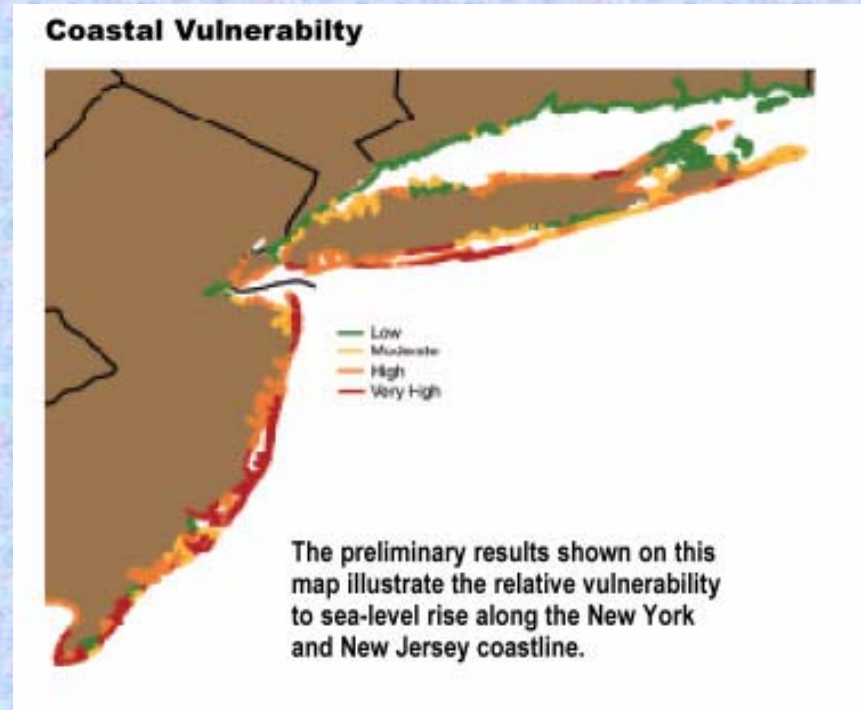

Temperature in degrees centigrade (compared with 1960-1990 baseline)
Atmospheric carbon dioxide (CO2 in parts per million)
CO2 (ppm)
370
350
330
310
290
270
250
230
Temperature (difference)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
1000
900
800
700
600
500
400
300
200
100
0
Years Before Present


Average yearly statewide temperature; New Jersey
Degrees Fahrenheit
56
55
54
53
52
51
50
49
48
1890
1910
1930
1950
1970
1990
2010

Evidence of Rising Sea Levels in New Jersey



Impacts of Global Warming
Rising Sea Levels in New Jersey



Rising sea levels will **increase the severity of storm-related flooding** in coastal and bay areas and will result in **significant property losses and impacts to the coastal ecosystem**.

Severe erosion has occurred on many NJ beaches

Beach replenishment has been successful in holding back the ocean – but long-term prospects are uncertain

picture from Psuty, Norbert, Rutgers U.

FLOODS: There have been three 50-year floods of the Delaware River within the last 2 years. This may be symptomatic of global precipitation trends.

NJ is already actively working to reduce its carbon footprint!!!

- Energy Master Plan - Goal: meet 20% of NJ energy needs through efficiency and conservation by 2020.
- Regional Greenhouse Gas Initiative (RGGI)
- NJ Clean Car Program - litigation
- NJ Renewable Portfolio Standard - utilities must meet 20% of customers' electricity needs from renewable sources by 2020
- CO_2 classified as a pollutant
- Clean Power Choice Program
- Attorney General litigation with other states
- NJ Clean Energy Program
  - Homeowner programs
  - Support to commercial sector and schools
  - Financial and technical assistance for renewables

NJ is already actively working to reduce its carbon footprint!!! *(con't)*

- Executive Order 11
  - Office of Energy Savings
  - Reduce state total energy consumption 10% by 2012
- NJ Cool Cities program
- NJ Green Homes Office
- Demonstration projects and research
- Activities at the municipal level

Ongoing Efforts

Energy Master Plan

- Reduce State consumption of energy 20% by 2020
- Includes sectors beyond electric generation
- All elements of the EMP to incorporate EO 54 2020 targets

Executive Order 54 *(Feb. 2007)*

- Sets Statewide goals for 2020 and 2050

  Stabilize greenhouse gas emissions at 1990 levels by 2020; and

  Reduce greenhouse gas emissions to 80% below 2006 levels by 2050
- Requires statewide inventory
- Requires sector-wide recommendations for action

Global Warming Response Act *(July 2007)*

- Embodies Governors EO goals into statewide limits
- Requires statewide inventory
- Requires sector-wide recommendations for action (June 2008)
- Requires DEP to create a GHG reporting program (Jan. 2009)
- Requires regular reports to the Legislature

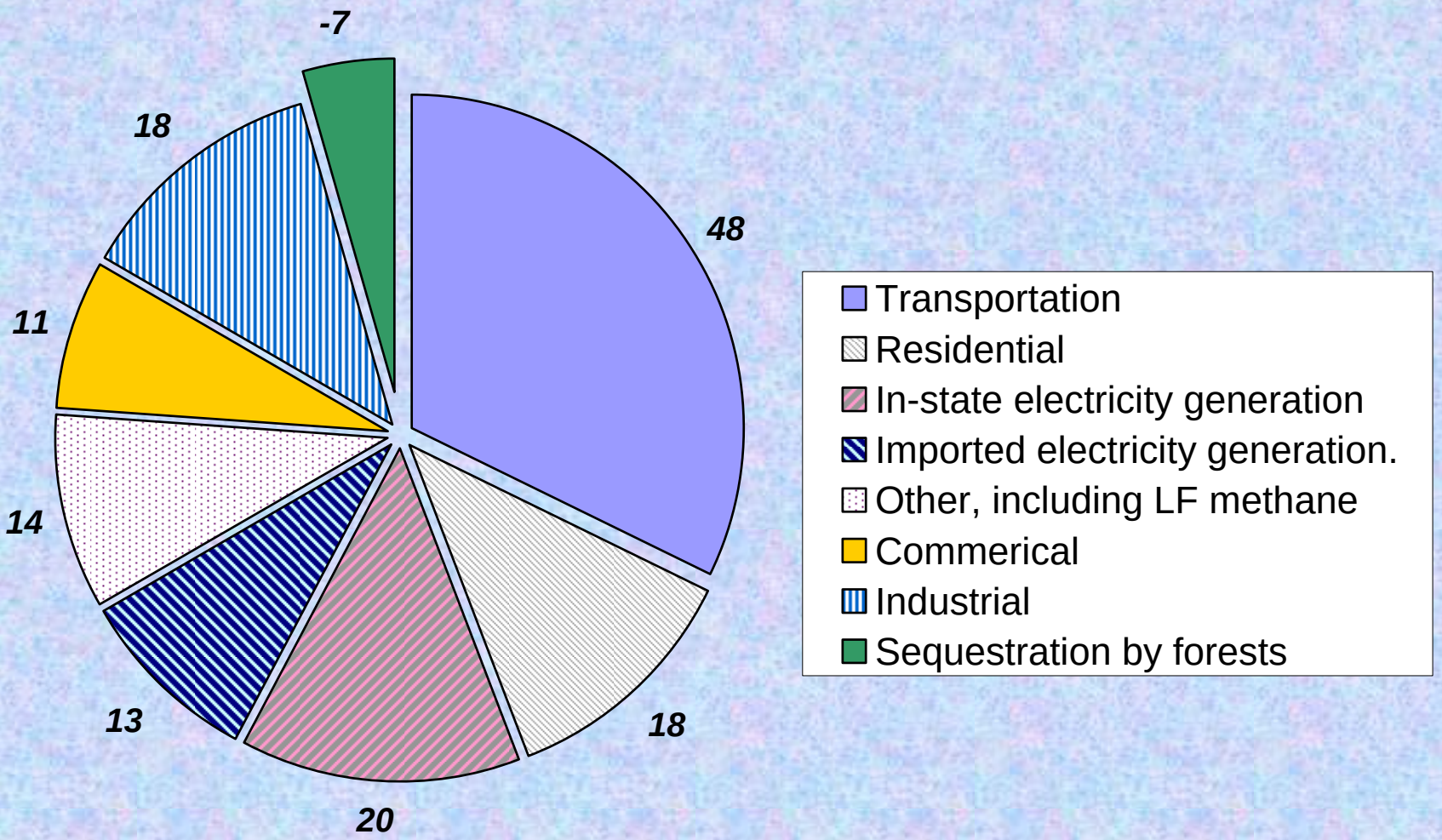
Global Warming Solutions Fund (auction) *(Jan. 2008)*

- Authorizes a CO2 auction
- Specifies distribution of auction proceeds
- Establishes Emissions Portfolio Standard
- Decoupling provisions for EE

GHG emissions inventory now available for comment

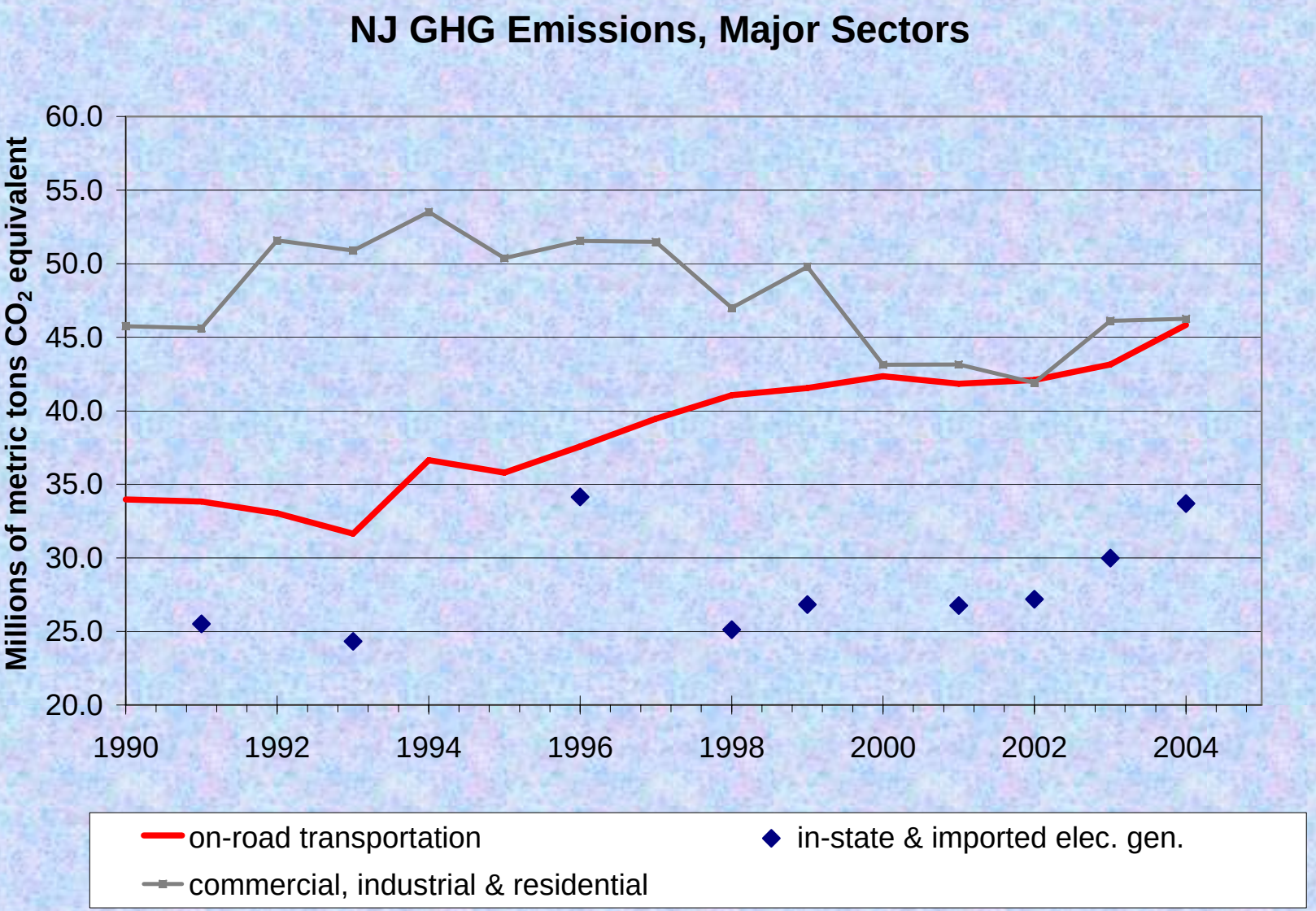
Greenhouse Gas Emissions by Sector; New Jersey, 2004

Millions of metric tons CO_2 equivalent

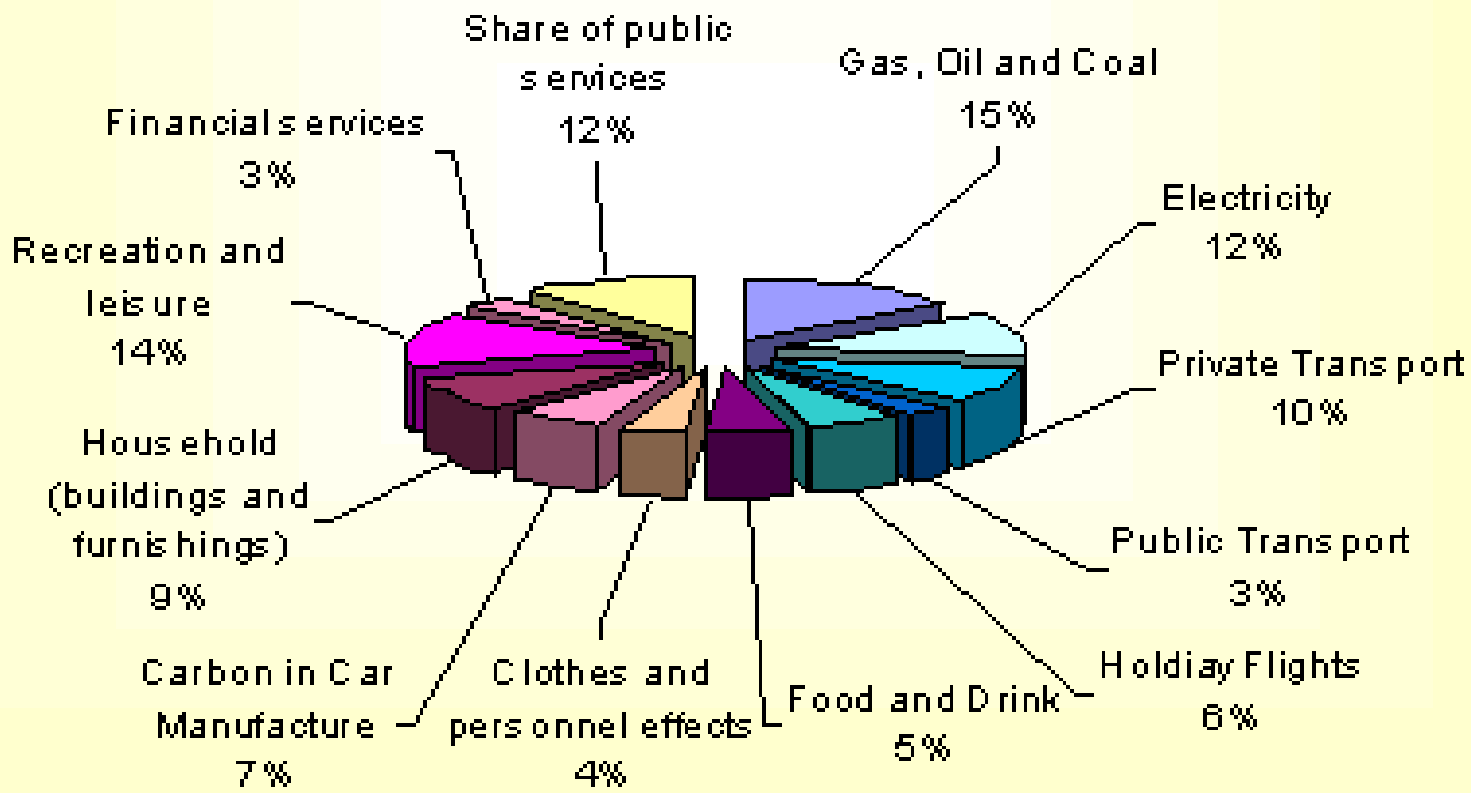


Emissions Projections ($MMtCO_2e$)

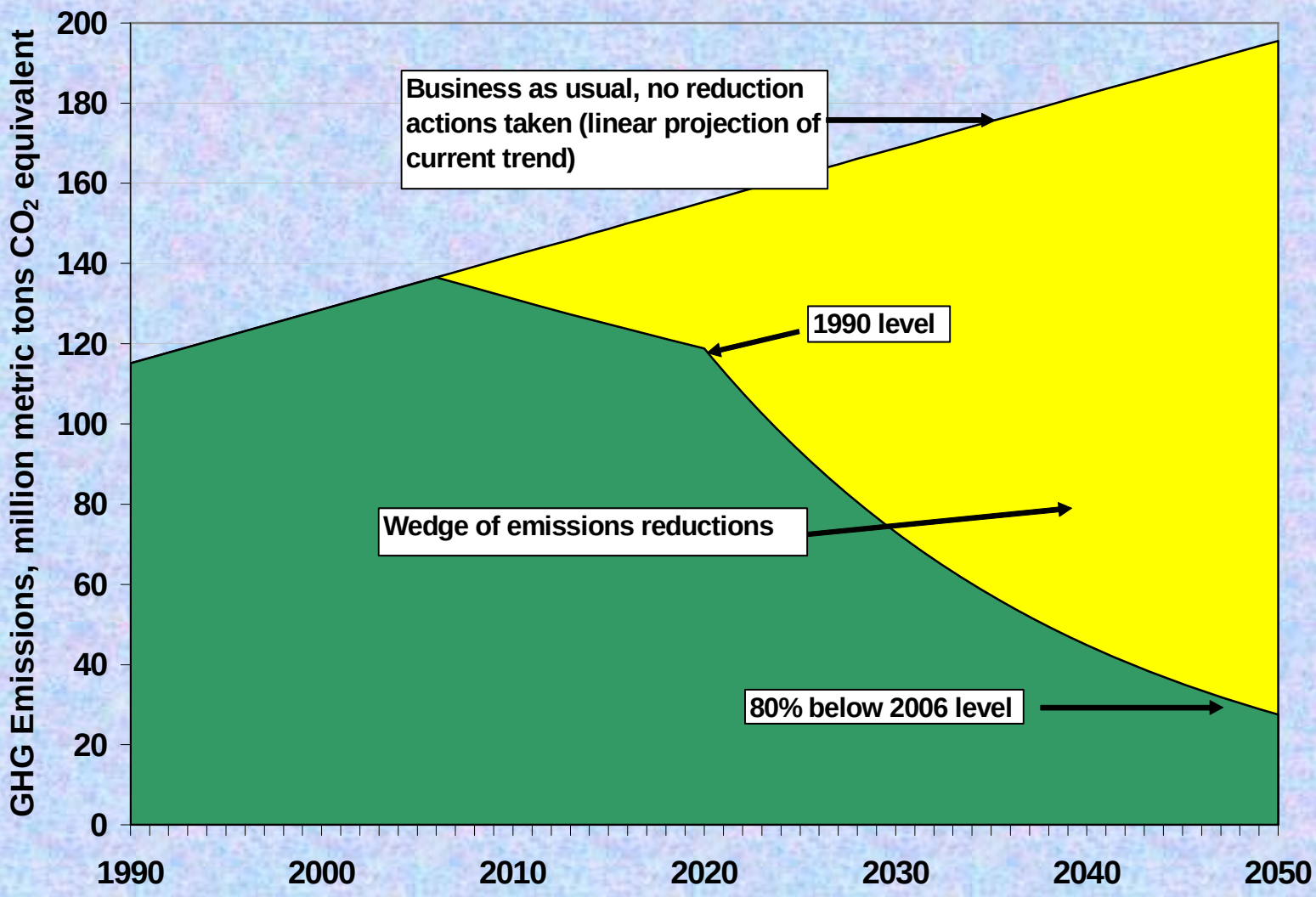
	2004	2020 (BAU)
Transportation (on road gasoline)	38.3	44.3
Electricity generation		
In-state	19	21.5
Out-of-state	13.4	20.3
Residential (space heat/combustion)	17.6	19.3
Commercial (sh/c)	10.9	7.3
Industrial (sh/c)	17.8	15.7
Highly Warming Gases	3.7	8.5
Industrial (process emissions)	.1	.1
Agriculture	.5	.4
Natural gas distribution	2	2.1
Landfills, POTWs	6.8	6.0
Released through land clearing	1.1	1.1
Sequestered by forests	-6.8	-5.9


NJ GHG Emissions, Major Sectors
Millions of metric tons CO_2 equivalent
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
1990
1992
1994
1996
1998
2000
2002
2004
on-road transportation
in-state & imported elec. gen.
commercial, industrial & residential

Breakdown of a typical person's Carbon Footprint



New Jersey Greenhouse Gas Emissions and Limits



Guiding Principles

1. Need a portfolio of measures: no single "cure for climate change";
2. Give priority to policies that achieve largest cost-effective reductions and build future markets – **the economic promise of early action**;
3. Give preference to market-based mechanisms that fully incorporate the costs of global warming to drive long-term change;
4. Consider the costs of our actions but the costs of inaction as well;
5. Early reductions are critical but not if they require investments in long-term dead ends;
6. Today's infrastructure investments must consider tomorrow's carbon footprint;
7. Seek cooperative action with other states, regions and countries;
8. Exceed the 2020 and 2050 limits

Policies Under Study

- Electricity Generation *(in-state and out-of-state)*
- Buildings *(residential, commercial, industrial)*
- Industrial and Commercial
  (EGUs, POTWs, landfills, refineries, manufacturing process emissions)
- Forestry, vegetative cover, agriculture
- Other highly warming gases *(methane, SF6)*
- Waste management
- Transportation *(vehicles, fuels, infrastructure, VMT)*
- Outreach and Education

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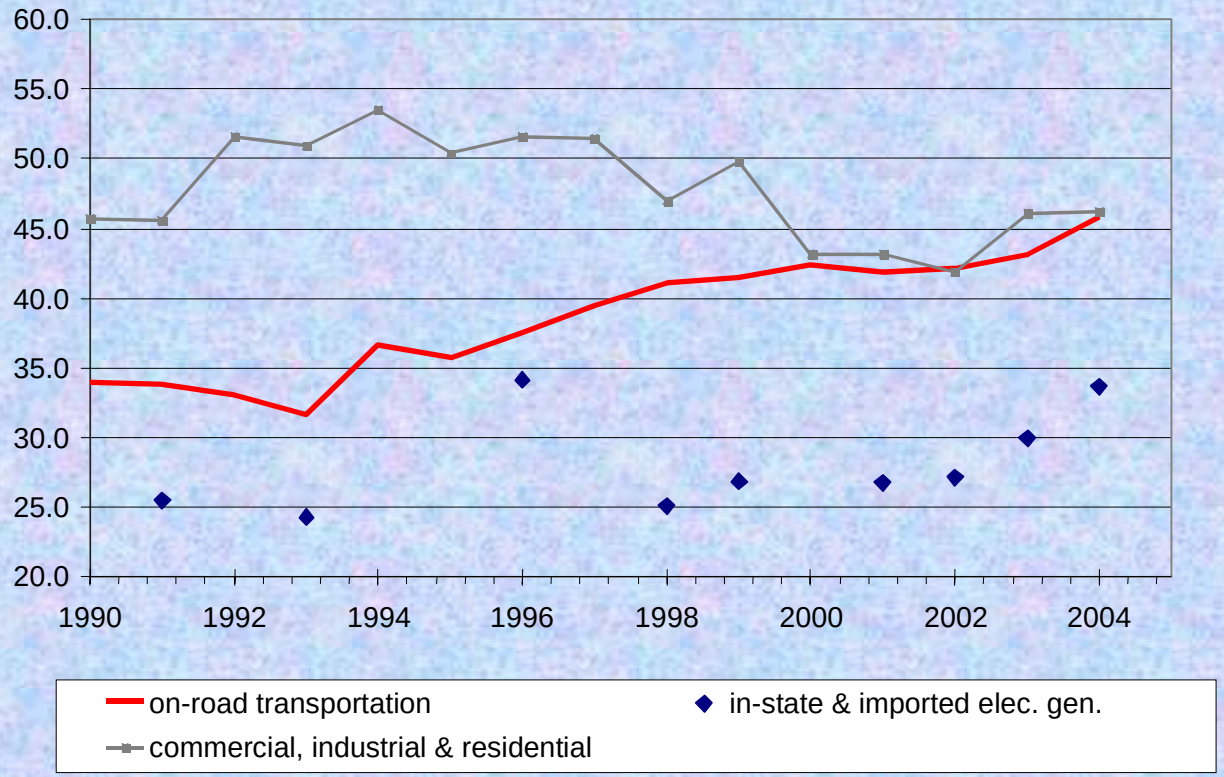
NJ GHG Emissions, Major Sectors

equivalent

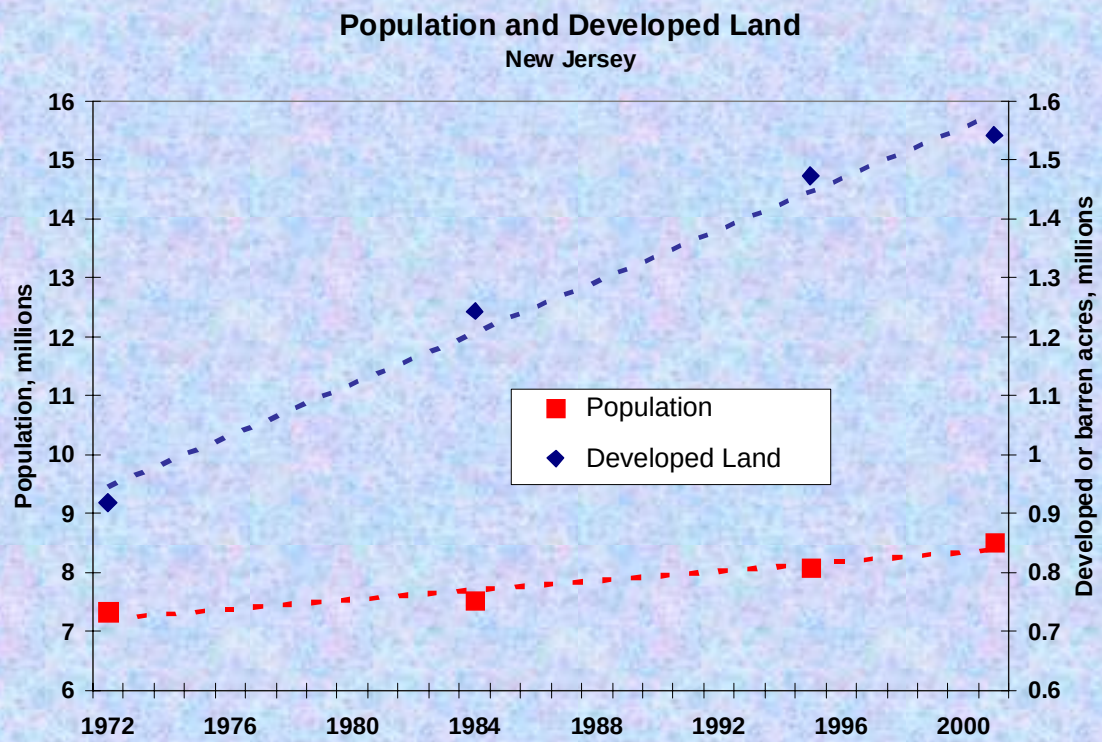
Millions of metric tons CO



Transportation: sector of greatest increase of GHGs

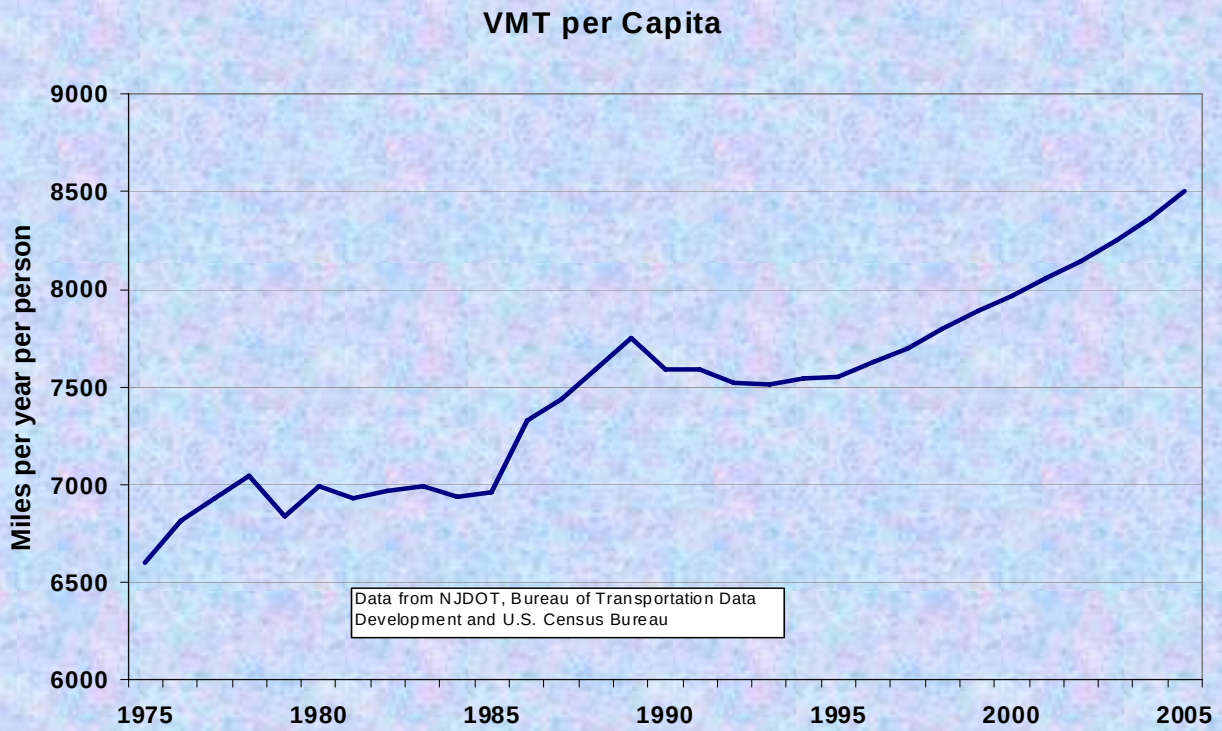
1972 to 2001

- **68% increase in developed lands**
- **16-19% increase in population**



1975 to 2005

53% increase in VMT



- @40% of all development between 1985 and 2002 occurred outside “smart growth” areas;

- More than 40% of New Jersey’s development is low density single family homes

- Average home size in the United States increased 1400 square feet from 1970 to 2,330

Take home message:

We have sprawling land use patterns in New Jersey that are driving up our VMT at alarming rates which, in turn, leads to the greatest sectoral increases in GHGs;

- Our sprawling land use patterns have a serious impact on environmentally sensitive areas and, as such, reduce opportunities for sequestration;
- We have a highly consumptive housing lifestyle so we leave a bigger "footprint" on the landscape;
- There are tremendous opportunities for development and redevelopment in areas that are "GHG friendly."

Reducing GHG Emissions via "Sustainable" Growth

- Sustainable land use patterns could reduce transportation related CO2 emissions by 7-10% by 2050 (US wide)

- Shifting 60% of new growth to compact development would save 85 metric tons of CO2 annually by 2030 (US wide)

- An acre of forest sequesters @ 2 ton of CO_2 equivalent/year *(Offset 7 regular (not energy star) window home air conditioners running 24/7 during 6-8 weeks or 15 electric clothes dryers used for 1 load/ week/year)*

Sustainable Growth → How

↓ Where

Sustainable Growth → How

↓ Where

Smart Growth

Smart growth means making land-use decisions that steer new growth to the places where it does our economy, and our environment, the most good: specifically, in and near existing communities where we've already invested in roads, sewers, schools and services. Smart growth means rebuilding today's older towns, suburbs and cities - rather than building on our last open lands. Smart growth maximizes the investments we've already made in our homes and communities, even as it protects our last farmlands, shoreline and woodlands from further development. It increases our choice of good communities and homes in which to live, and our choice of how to get around.

New Jersey Future

Sustainable Growth

How

Capacity-based Planning

and

"Green Design"

Where

Smart Growth

Environmental capacity-based planning recognizes both the environmental limits and opportunities for growth. It ensures that growth and redevelopment account for natural limits on water supply, waste treatment, and impacts to environmental features.

- Water Quality Management Planning
- Statewide Water Supply Master Plan
- Threatened and Endangered Species and Habitat protection
- New C1s
- Flood Hazard Rules

Buildings and Green Design

Buildings account for almost 50% of US greenhouse gas emissions. The annual energy required to operate residential, commercial, and industrial buildings AND the embodied energy of industry-produced building materials like carpet, tile, glass, and concrete exposes buildings as the largest energy consuming and greenhouse gas emitting sector.

Green design presents opportunities to reduce greenhouse gas emissions in all these areas. Green Buildings are:

– Located in appropriate areas for development or redevelopment

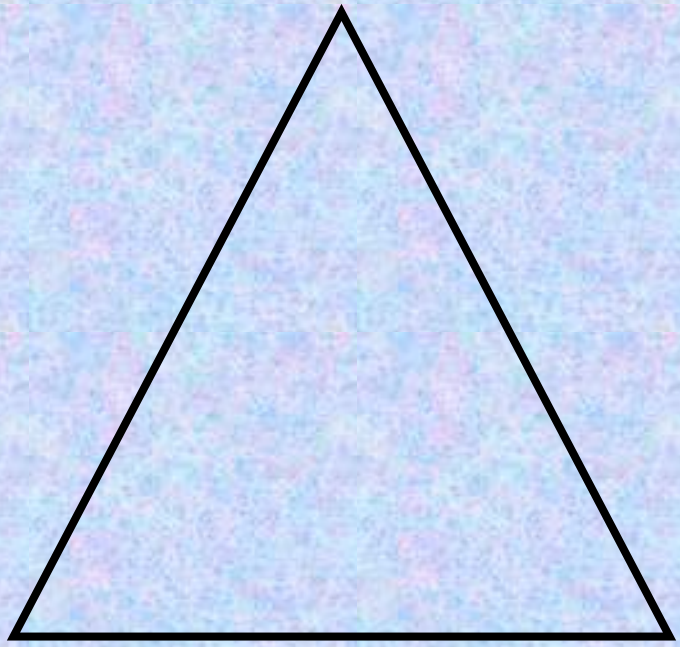
– Are located near mass transit

– Use less water and energy

– Use building materials with recycled content, that are regionally produced and manufactured or harvested using environmentally responsible forest management practices.

– Are healthy places to live or work.

Planning



Regulations

Spending

Integrating Smart Growth into NJ Efforts to Reduce GHGs –

1. Adopt measurable targets for "green" travel behavior: reduce VMT/increase transit ridership.
2. Create opportunities to live and work near key train stations and bus stops by targeting state investment and prioritizing permit review.
3. Offer tangible incentives for municipalities to plan and zone for compact, mixed-use development by redirecting existing state spending. Consider amending the Municipal Land Use Law to ensure local land use plans reinforce state GHG targets.
4. Make driving more expensive.

NJ Future

Promoting Capacity Based Planning And Green Design

Environmental Capacity Based Planning

- "readiness checklist" to inform and assist sustainable growth projects were regulatory obstacles are limited
- WQMP updates and Plan Endorsement transparently lining up local growth and environs protection

Green Design

- Provide financial incentives to reduce energy and water use
- Provide financial incentives to build green on brownfield sites
- Green NJ codes to increase energy and water efficiency

Objective for incorporating Sustainable Growth into NJ's efforts to combat GHGs?

1. Reduce VMTs

2. Implement sustainable design to be less consumptive and produce less GHGs

3. Locate development to maximize sequestration